

WHAT IS CLAIMED IS:

1. A data transmission apparatus for transmitting a data signal in accordance with a predetermined protocol in one direction
5 within a ring network of a plurality of data transmission apparatuses, the data signal being obtained by modulating an electrical signal of a predetermined frequency, comprising:

signal determination means for determining a presence or absence of a data signal from an immediately upstream data
10 transmission apparatus in the ring network based on an amplitude of the data signal;

data evaluation means for evaluating a data value of the data signal from the immediately upstream data transmission apparatus;

15 processing means for performing a process for a result of evaluation by the data evaluation means in accordance with the predetermined protocol; and

evaluation stopping means for causing the data evaluation means to stop outputting a result of evaluation to the
20 processing means if the signal determination means determines that there is no incoming data signal.

2. The data transmission apparatus according to claim 1, further comprising:

25 transmission means for transmitting the data signal to

an immediately downstream data transmission apparatus; and

transmission stopping means for causing the
transmission means to stop transmitting the data signal to the
immediately downstream data transmission apparatus if the signal
5 determination means determines that there is no incoming data
signal.

3. The data transmission apparatus according to claim 1,
further comprising signal extraction means for extracting the
10 electrical signal of the predetermined frequency,

wherein the signal determination means includes:

threshold level storage means for storing a
threshold signal level; and

level comparison means for determining a presence
15 or absence of the data signal by comparing the level of the electrical
signal extracted by the signal extraction means against the
threshold signal level stored in the threshold level storage means.

4. The data transmission apparatus according to claim 1,
20 further comprising:

read means for reading out, as a digital data value,
a signal obtained by modulating the electrical signal of the
predetermined frequency; and

difference value detection means for detecting a
25 difference value by subtracting, from the digital data value

currently read out by the read means, a digital data value immediately previously read out by the read means,

wherein the signal determination means determines presence or absence of the data signal based on the difference
5 value detected by the difference value detection means.

5. The data transmission apparatus according to claim 4,
wherein the signal determination means includes:

difference value storage means for storing a
10 threshold difference value; and

difference comparison means for determining a presence or absence of the data signal by comparing the difference value detected by the difference value detection means against the threshold difference value stored in the difference value
15 storage means.

6. The data transmission apparatus according to claim 1,
further comprising reset means for suspending transmission and reception of the data signal for a predetermined period if the
20 signal determination means determines that there is no incoming data signal.

7. The data transmission apparatus according to claim 6,
wherein, when resetting a setting made in the data transmission
25 apparatus during a boot of the ring network, the reset means suspends

transmission and reception of the data signal for a period which is equal to or greater than a result of the multiplication: [a number obtained by subtracting one from the number of data transmission apparatuses in the ring network] \times [an amount of time required before the transmission stopping means is able to stop transmission of the data signal after the inputting of the data signal to the signal determination means stops].

8. The data transmission apparatus according to claim 6, further comprising lock signal outputting means for transmitting a lock signal for establishing clock synchronization to an immediately downstream data transmission apparatus if suspension of transmission and reception of the data signal by the reset means is released.

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9. The data transmission apparatus according to claim 8, further comprising training signal outputting means for, after the lock signal is transmitted by the lock signal outputting means, transmitting a training signal for adjusting evaluation levels used for the data value evaluation by each data transmission apparatus in the ring network.

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10. The data transmission apparatus according to claim 1, wherein the predetermined protocol is MOST (Media Oriented Systems Transport).

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11. A data transmission system for transmitting a data signal in accordance with a predetermined protocol in one direction within a ring network comprising a plurality of data transmission apparatuses which are sequentially connected to one another, the data signal being obtained by modulating an electrical signal of a predetermined frequency,

wherein each of the plurality of data transmission apparatuses includes:

signal determination means for determining a presence or absence of a data signal from an immediately upstream data transmission apparatus in the ring network based on an amplitude of the data signal;

data evaluation means for evaluating a data value of the data signal from the immediately upstream data transmission apparatus;

processing means for performing a process for a result of evaluation by the data evaluation means in accordance with the predetermined protocol; and

evaluation stopping means for causing the data evaluation means to stop outputting a result of evaluation to the processing means if the signal determination means determines that there is no incoming data signal.